

One of the greatest difficulties of teaching is the inability of the instructor to enter perfectly into the pupil's state of mind. A teacher knows a thing, sees it clearly, and may have been years arriving at the perception of it in its various bearings and relations. He then undertakes to communicate this piece of knowledge to one who knows nothing about it. Some phase of it, which, at the time, strikes the teacher as most complete, is set before the pupil in language consistent with the teacher's views. Now, the first difficulty occurs in the want of entire correspondence between the ideas attached to the same words by the teacher and pupil. It rarely happens that even any two educated minds will coincide in this particular. To overcome this obstacle, repeated and varying statements must be made, so that one impression may correct another where words have been but imperfectly understood. But the greatest difficulty lies in this, that no teacher can remember the history of the doubts and embarrassments that were overcome in his own gradual progress to a thorough understanding of the matter in hand; and besides, imperfect as is his recollection, only one phase of it occupies his consciousness at a time. And, however much of one's mental history is remembered, it is scarcely probable that the troubles of the pupil will be just those that the teacher experienced.

Again, owing to mental peculiarities, some part of an explanation seizes the attention of the pupil, and quite engrosses it for the time, so that other parts, equally important, are unattended to, and the conception formed is partial and imperfect. The teacher, therefore, who expects a single explanation to end the matter and afford the pupil a fair opportunity, makes a great mistake. The chances are many that the lesson is not understood, and, though a verbal account should be rendered by the pupil that would seem to indicate a correct apprehension of the statement, yet much would be gained by resuming the subject

at another time under different aspects of thought on the part of the teacher, which will lead to fresh explanations, while the same newness of approach would change the mental attitude of the learner, widen his notions, and correct his errors. Every such new attack upon a subject of study should be so conducted by the teacher as to make it a means of revealing the pupil's mental condition.

## CLASSICAL STUDY AS A MENTAL TRAINING.

MANY admit that classical study does not impart much useful knowledge, and they do not advocate it on any such ground. They maintain that the true value of these studies lies in their superiority as an intellectual exercise, as a training.

This idea of training upon a foreign language has grown up in modern times. The Greeks did not train upon Persian or Scythian; they knew no language but their own. The Romans read Greek, but not for training; they read with a design to imitate, and signally corrupted their own idiom. The Middle Ages studied Latin because they had to make use of it. With them Greek was an after-thought, and was resorted to for the information it contained. It is only in these enlightened times that youth is wasted over laborious acquisitions for the sake of the exercise. Why have we never extended the principle beyond classics? Why do we not train our soldiers on the bow and arrow and the tomahawk, our deer-stalkers on a revived breed of the boar, our masons on towers of Babel, our clergymen on Druidical dances, chants, and whoops?

What faculty or faculties may classics be said to train? Whether the argument be of ancient or of modern date, let us consider it seriously and in detail.

First, of the memory. I am not aware that any special efficacy is claimed for classics in the training of memory. Naturally some people have more retentive memories than others, and retentiveness in a particular department is the result of familiarity with that department and interest in it. A Latin student of many years' standing easily remembers the peculiarities of a new Latin word. The experienced man of commerce easily remembers the peculiarities of new goods or a new customer; a woman of fashion, the peculiarities of a new dress. Every professional man takes up with ease what would be an utter puzzle to the uninitiated in his subject, simply because nearly all the novelty has occurred to him before in other forms. It is a matter of grave doubt whether such a familiarity with one subject is a help to the acquisition of another, unless of a kindred character. Experience points the other way. The Latin scholar rarely succeeds in commerce, beginning at mature age; the man whose youth has been spent in business rarely succeeds as a student of Latin. The late learner, in whatever field, is at a disadvantage, not so much because he is intellectually incapable of mastering the subject, as because he is preoccupied by other interests.

Next, of the reason. Let us examine the different operations in classical study, and see how far they may be said to give a special training to the reason.

That there is no discipline in Latin Grammar unattainable through English Grammar we shall show further on. In both cases the pupil is exercised in classifications of particles and usages, and applications of general rules to particular cases. Once the materials are collected—and that is not a grammatical process—constructing English, as an intellectual exercise, is not different from constructing Latin.

Is there a special discipline of the reason in translation from Latin into English?

In translation there are three distinguishable stages:

The first is to look out the different English equivalents for the Latin words. There is no discipline of the reason in that. The third stage (passing over the second for the moment) is the arrangement of the selected equivalents, more or less in

conformance with English usage. But that is obviously an exercise in correcting bad English.

It remains, then, to consider the intermediate stage. There being no peculiar exercise in the other two stages, the peculiar exercise of translation must be found here, if such peculiar exercise there be. The exercise alleged is an exercise of judgment. When the pupil has run over various equivalents of a Latin word, he is called upon to select the one appropriate to the context. Now, in the first place, there is in the actual practice of this operation very little exercise of judgment. Beginners are never asked to make the effort. They are supplied with vocabularies, exhibiting only one or two meanings. The exercise of judgment is thus reduced to a minimum for the early lessons, and, by the time the pupil is advanced to the dictionary, he has learned, by rote, such a number of usages in critical situations, that he merely recollects them to suit, and exercises very little more judgment than at the beginning. In the second place, the exercise, of whatever extent or value, is peculiar: it may be obtained in English. Precisely the same utility is called into play for the choice of words to suit the exigencies of metre, rhyme, or melody.

Finally, to call this process of selection a training in probable reasoning, as has been lately done, is an error arising from misconception of what probable reasoning is. In choosing a word, the boy does not calculate the probabilities for and against the chances of a translation being right or wrong. He only the astonishment of a schoolmaster if his pupil should say—"*Gallia est omnia divisa in partes tres*." The chances are three hundred and sixty-seven to one that it means, *All Gaul divided into three parts*, and not, *All Gaul eats things divided into three parts*, for *est* means *is* three hundred and sixty-seven times for once that it means *eats*."

There is, then, no special training of the reason in translation from Latin into English. This will be generally conceded. In favorite gymnastic for the reason is not translation from Latin into English, but translation from English into Latin—Latin composition.

Is there a special exercise of the reason in Latin composition?—Let us analyze composition as we have analyzed translation, with an eye to the alleged exercise of reason.

That there is little exercise of reason in looking out and setting appropriate Latin words will be at once acknowledged. Everybody knows that the suitable words are chosen mainly, not solely, on authority. Such exercise as there may be, is not equal to English composition, where there is greater latitude of choice.

Although little judgment is exercised in choosing the words, there is, undeniably, some discrimination required in combining according to their several usages.

First, what is the amount of discrimination?—Whoever wishes to reflect on the process will see that it involves more than judgment. For example, in construing "*ator*" in the ablative, the pupil remembers that "*ator*" takes the active, and what the ablative form is. There the exercise of judgment is at a minimum. Construing "*in*," signifying "*in*," with the accusative, the pupil has to remember the active form: he has to distinguish between "*motion*" and "*rest*." There the exercise of judgment is at a maximum. The first example is a type of the usual exercise.

Secondly, granting a much greater exercise of judgment than is apparent, I would ask whether it is peculiar to Latin composition?—On the contrary, it is an exercise performed by and hourly by us all, in every case where we do not act without thinking—in deciding whether we shall buy a new hat, whether we shall cross the street, what we shall have for dinner, or where we will go to-morrow. There are abundant exercises of judgment in the study of English composition, as shall endeavor to show in considering the educational resources of our own language.

Finally, and the remark applies to all alleged general train-

ing of the reason, delicacy of discrimination in one material is very little help toward delicacy of discrimination in another material, of a different kind. This is a matter of every-day observation. A good judge of cloth is not a better judge of a speech or a poem than a bad judge of cloth, and conversely. Instances might be multiplied without end. In fact, so far from being trained in general judgment, a good judge of one thing is presumably a bad judge of any other thing—a good judge of Latin composition presumably a bad judge of English composition. This is acknowledged by Mr. Sidgwick, an able advocate of classical training. He says: "When people talk of 'training the memory, judgment, etc.,' they often ignore the difference between a general and a special development of these faculties. *There is a great danger lest, if trained to a pitch in one material only, they will not work well in any other material.*"

The plain argument that memory and judgment are exercised in Latin composition is not enough for one class of eulogists. Perhaps they see that memory and judgment are exercised in a great many things quite as much as in Latin composition. They defend composition as a training in the management of principles.

It so happens that the amount of this training in principles can be measured by arithmetic. There is a book entitled "*Principles of Latinity and Melviniana*," a hand-book of Latin composition, compiled by an Aberdeen professor, who, with the metaphysical acuteness of his province, may be supposed to have evolved all the principles applied to the art of composing in Latin. If, therefore, we count the number of principles in this book, we shall know to a tolerable certainty how much training in principles is given by Latin composition.

How many principles occur in this book of principles?—Twenty-two pages, about one-third of the "*Principles*," are devoted to the structural usages of verbs. Now, if verbs and phrases conforming to one construction fell under general principles, the elaborate lists would be unnecessary. But there they are, verbs "*admitting the bare infinitive*" in one list, verbs taking "*nt*" in another, verbs taking "*quin*" in another. Whence we infer, either that Latin verbs are of an arbitrary turn with their "*followings*," or that the learned author of the "*Principles*" thought principles too hard for youthful composers, and so gave them particular usages. Again, ten pages are devoted to the different Latin equivalents of our participial clauses; a considerable space to the different ways of expressing in Latin "*Whether—or*," and about one-half of the whole book to "*Miscellaneous Observations*," "*Cautions in Declension*," "*Cautions in Conjugation*," "*Melviniana*," and "*Synonymes treated more Melviniana*"—comical pabulum for a young Briton. All these are regulations touching particular usage; by them the pupil is no more elevated to general principles than is the coach-driver by the notice, "*Caution*." When you hear a horn blow, etc."

This book of principles, then, contains how many? Just two. I think I have detected two. The "*Laws of the Sequence of Tenses*," and the "*Laws of the Indirect*," do prescribe community of usage under difference of matter. And these two are so spread out and clothed in examples, that, as principles, they are almost wholly superseded by the exhibition of details.

The classical pupil, then, gets no special training in memory or in judgment. Does he get any mental training worthy the name?

We have still to consider the strongest argument of the disciplinarian—insisted upon by many that readily allow other arguments to be fallacious. It is asserted that the peculiarly trying character of classical study has a unique efficacy in stimulating the intellectual powers, in teaching habits of studious application, habits of concentrating the attention upon mental work.

The confinement of the attention to the work in hand is

of vast importance. If this habit can be gained in no other way than by the study of Latin and Greek, it would be a serious offence to propose a discontinuance of these studies.

What are the conditions of attention? They are simple enough: *interesting work, and plenty, but not too much, of it.* Work may be interesting in two ways: it may be intrinsically attractive, or it may be made attractive by the good old plan of penalties and rewards.

In confirmation of what I have given as the conditions of attention, I may quote from Arthur Helps: "Give children little to do; make much of its being accurately done. This will give accuracy. Insist upon speed in learning, with careful reference to the original powers of the pupil. This speed gives the habit of concentrating attention, one of the most valuable of mental habits."

Nobody will maintain that in classical study alone are these conditions realized. Nothing could well be more uninteresting. It needs to be largely stimulated by flogging and prize-giving. There could be no difficulty in finding a substitute for classical study in that respect. Its only good point as an educational instrument is its quantity. Can any other subject or subjects be conceived ample enough to occupy the school-boy brain, and suited for the school-boy capacity?

But why, it may be asked, seek a substitute for classics? Show cause for change.

Some months ago, a professor drew a distinction between *training* and *cramping*. To train a boy is to "fit him for making a proper use of his faculties, and prepare him for getting up and using those particular branches which are fitted specially for the profession he has to follow." To cram a boy is to "stuff his mind full of an enormous mass of facts which, when his education is finished, he does not know what in the world to do with."

Granting, then, that classics train the attention, what if they cram? That is sufficient cause for change, if there be any other subject that trains equally well without cramming.

A knowledge of classics is cram. It must be owned that, gauged by the above definition of cramming, classical education is one of the purest cases of cramming that could be imagined. When school-boys were taught Latin in mediæval times, they found a use for it afterward: they read and wrote in Latin. Our boys, packed with some thousand words of a strange and obsolete tongue, find no use for their attainments: they read and write in English. They are not even educated to the pitch of reading a Latin or Greek author for amusement. They are educated to the moderate pitch praised by Lord Stanley at Glasgow: a suicidal moderation. Hear the confession of Dr. Smith, for fourteen years Classical Examiner in the University of London: "Judging from the examinations in the University of London, and the examinations which I have conducted elsewhere, I have rarely met with boys who can translate the easiest piece of Latin or Greek *ad aperturam libri*." And yet, in the schools and colleges preparatory for such examinations, classics "occupy a very considerable part of the education in point of time." The fact, therefore, is incontestable. Nearly all our classical pupils are crammed: "stuffed full of an enormous mass of facts, which, when their education is finished, they do not know what in the world to do with."

Is there any study that would train without cramming? Is there any subject ample enough for training, and, at the same time, generally useful—useful not to a few only, but to all English school-boys?

A knowledge of English would not be cram. All would be better of knowing how to record and communicate their thoughts clearly and effectively. "There are," says Locke, "so many advantages of speaking *one's own language* well, and being a *master of it*, that, let a man's calling be what it will, it cannot but be worth our taking some pains in it." And Cicero says, "Not to be well acquainted with *one's native language* is a great disgrace."

The leaders of education in the times of the Reformation acted on a similar principle. In their day, all literature judged worthy of scholarly study was written in Latin; and they arranged school studies to correspond. I quote from Mr. Parker's Essay on the History of Classical Education, the advice given by Melancthon, and subsequently acted upon by himself and other schoolmasters:

"His (Melancthon's) report on churches and schools (1524) became the basis in Saxony of a reformed scholastic as well as an ecclesiastical establishment, independent of Rome. The example was followed in other German states. The report recommends the following regulations for schools: 1. The children to be taught Latin only, not German, Greek, or Hebrew. Plurality of tongues does them more harm than good. 2. They are to be kept to a few books."

On entering school, the boys were set to learn lists of Latin words, or, as in Sturm's system, were taught the Latin names of every thing they saw about them. The end being the attainment of the Latin language for practical purposes, speaking Latin was strictly enforced in school, and even in the neighborhood. The master, as far as might be, spoke nothing but Latin.

If we obey the principle on which the Reformers acted, and refuse to be led away by externals, how should we organize our schools? Latin was their literary language: in their schools they made every thing subordinate to the teaching of Latin. English is our literary language: in our schools should not every thing be subordinated to the teaching of English?

The only doubt that can arise is, whether the study of English affords material enough to train upon. It is beyond dispute that English is a no less interesting study than Latin or Greek. And we all agree that a knowledge of English is valuable. But many are dubious whether English can become a school-boy discipline ample enough to take the place of Classics. Let us next consider what can be made of English as an instrument of education.

All who have recently attended the higher classes in our public schools know how much teaching has been facilitated by the frequent use of photographic projections with the electric, or Drummond, light. Thanks to this process, the most delicate objects, whether microscopic or telescopic, can be faithfully represented to an entire audience; and it was supposed, in arriving at these results, that perfection was certainly attained. M. Bourbouze, however, in explaining the gas-machine of M. Hugon, experienced many difficulties not before anticipated, while demonstrating the relative movements of the slide and pistons; and was obliged to repeat, several times, the same design, with the organs in different positions, with only a partial degree of success. In studying to remedy this defect, we are glad to say he has entirely succeeded, having invented a process that will completely revolutionize the art of projection. He constructs his photographs in movable parts: but turning a small winch, the whole design is correctly demonstrated; the pistons and slides repeat successively the different relative positions taken by the real machine, and consequently all difficulties in explaining disappear. This elegant result has been obtained by the ingenious inventor by means of a very simple arrangement: each movable organ is photographed on a special glass, and these different glasses are arranged in a frame which contains, on a fixed glass, the photography of the fixed parts of the apparatus represented. The movable glasses are each fixed to a connecting-rod moved by a single winch; the length of each connecting-rod being calculated in such a way as to produce accurately the movement required.

## THE NEW EDUCATION.

UNDER the title of "The New Education," a writer in the *Atlantic Monthly* of February and March gives an account of the scientific and polytechnic institutions of this country, and what should be the preparation for entering them. Much of the information he offers is interesting, and he has several excellent suggestions; but what most struck us in the discussion was, that for the "new education" he provides no adequate basis. He says that all but one of the scientific and technological schools require no preparation in Latin for admission, "and in none of them are the classics taught." But, instead of accepting this position as an abandonment of the regular study of Latin by the "new education," he maintains that it should be merely put back to the preparatory period, contending that until seventeen all should be educated together.

This defence of the early study of Latin is a step backward, for the most enlightened educators of the present time advocate its postponement to the years of mental maturity; and this is all the more necessary when we consider the grounds on which the writer places its claims. Latin is to be acquired, not because of its value as an introduction to the language of science—this is vehemently repudiated—but because of the wealth and perfection of the literature it contains. That is, a boy who proposes to study the practical sciences, in addition to his thorough study of English (which the writer insists on), and various other preliminary studies, is to carry the acquisition of Latin to such perfection that the mind can move in it with full freedom, so as to enjoy the great masterpieces of its literature.

Now, it is testified to with emphasis by the best observers, that even of those who give themselves entirely to the classical course, in the college as well as the academy, not one in ten arrives at this result. How absurd, then, to suppose that it can be attained by students at seventeen! We refer those, who wish to see this point ably handled, to the argument on "Early Mental Training," by Dr. Barnard, of Columbia College.

Nothing is more notorious, than that the attempt to teach the dead languages to boys generally results in such a disgust with the whole subject, that they do not pursue them when college discipline ceases; and hundreds of the most eminent men who had kept up their scholarly acquisitions attest that they were never able to get over the prejudices and painful associations of early classical study. This consideration evidently does not affect the writer in the *Atlantic*; though, strangely enough, he raises an objection to the early study of science on this very ground. He objects to the study of elementary science in early life, because "we have seen many cases in which too early dabbling with the physical sciences proved a positive injury in later years." But, what is still more extraordinary, while rejecting science itself, he would still teach children the logic of science. He says: "One cannot too early teach a child the distinction between a fact and an inference from a fact." Although confessing that this distinction is but rarely grasped by the mature mind—saying that "few adults appreciate this fundamental difference in its full strength"—yet he thinks we cannot too early teach a child these abstract relations of mental philosophy. Did it never occur to him what the effect of this kind of "dabbling" might be upon the pupil's subsequent mental experience?

The writer of these articles seems quite to overlook the order of mental unfolding by which the training of the perceptive faculties should precede and prepare for the higher action of the reflective powers. This, indeed, must be the corner-stone of the edifice of "the new education." It must begin with the observation of the properties and relations of concrete objects which science deals with and Latin does not; and, as the mental faculties of the child gradually strengthen, and it begins to get intelligible command of abstract relations, the skilful teacher will draw attention to the mental operations by which facts and inferences are discriminated.



## EDUCATIONAL RESOURCES OF THE ENGLISH LANGUAGE.

HAVING in a former article considered some of the alleged educational advantages of the study of Latin, let us now turn our attention to the claims of English:

Passages of English, more or less unsuited for children, and often selected without method, are part of existing school-drill. This might be supplemented by attention to elocution and practice in committing to memory exercises that children are peculiarly apt for. Such exercises have the advantage of keeping the pupil occupied with the words of his own language, and of storing him with a fund of expression.

Looking out the meanings is also a valuable exercise in greater or less present practice. In the hands of a skilful teacher this might lead to a wide command of synonyms. The highest form of this exercise would be the precise discrimination of synonyms. The want of some such early training is very marked in current literature. It is strange that men should know, or at least have spent much of their school-time in learning, the conjectured shades of meaning in Latin or Greek words, while they ride rough-shod over the delicacies of their own vocabulary.

Again, if philology is to be studied, apart from comparative philology, it might be expected that boys should be taught the origin and changes in form and meaning of words they use daily, rather than crammed with the history of words they never use in after-life, and never view with any thing but a pedantic interest at the best.

A beginning might be made in philology at an early stage. The sources of words are determined by simple rules; it would be an easy task for beginners to apply these rules in referring words to their source, to decide whether words were taken from Latin, or Saxon, or Norman-French. A good exercise would be to Saxonize a whole Latinized paragraph, and inversely.

In discussing other studies in English, I shall make a distinction between analytical processes and synthetical processes. Both occur in dealing with what usage permits—the province of grammar—and also in dealing with what, within the compass of permissible usage, is best suited for its purpose—the province of rhetoric. Analysis is otherwise known as construing, or parsing; synthesis, as constructing, or composing.

In the meagre share of our school-time now allotted to the teaching of English, very little is done toward the practice of these operations. This is all the more to be deplored, because the analysis of sentences and the principles of composition are not taught in connection with Latin or Greek. It is a great waste of energy to learn meanings and shades of meaning of so many vocables destined to total neglect as soon as they have been learned; the evil is aggravated when so much labour is acquired without reference to principles applicable to all verbal compositions.

The grammatical analysis of sentences has lately been introduced in

into our schools. But the complaint is made that boys, though they soon learn to repeat glibly enough the hard terms used in that process, often fail to understand them. Now, what is the cause of this? It is due to two causes, both arising from the consumption of so much time on Latin and Greek. Too little time is left for this analysis; none but teachers know the quantity of iteration and exemplification necessary to get an abstract notion into a boy's head. And there is no time at all for an exercise, without which analysis can never be vividly understood—the opposite process of synthesis. Before a boy can be fully awakened to the gist of the terms of analysis, he must have applied them again and again to themes of his own composing, and there will be no time for such an exercise until there is an end of the classical supremacy.

There are books of elementary exercise in the synthesis of sentences. They are of a kind that any teacher might make for himself to suit his particular boys; and, once the ingenuity of teachers is set upon such exercises, they will doubtless be multiplied abundantly. I refer the inquirer to Mr. Dalglish's "Introductory Text-book of English Composition," to Mr. Armstrong's "Practical Introduction to English Composition," and other works of the same nature.

The purification of the language from blunders is an urgent necessity. A good way of habituating the pupil to recognized usage would be to keep him working at collections of grammatical blunders. Were English made the systematic study that Latin has been, we should in this way effect in the course of a generation or two a great purification of our language. We have a good many collections of genuine idioms with examples of their violation; but we want a great many books of this kind—contributions from many workers in the same field. Latin is well provided for in this way. One cannot help regretting that so much time has been thrown away upon settling pure Latin usage that might have been spent so much more profitably in the purification of our own tongue.

So much for familiarizing the pupil with the parts of a sentence, and correct grammatical usage. Practical teachers will recognize in what has been exhibited a wide field for school-study. Others will understand the amount of exercise involved, when they reflect upon the time now spent upon introductory exercises to Latin, of a much less extensive range than those I have indicated.

A knowledge of admissible forms of expression is more than Mr. Dantzen seems to have found in several "good Latin scholars." But a youth that is master of this accomplishment is but indifferently equipped for recording and communicating his thoughts. Much imperfect expression passes current. A thing may be put a hundred ways, all conformable to grammar; yet one, and perhaps not many more than one, accords with the laws of good composition.

Can the principles of good composition be taught? Is rhetoric—the knowledge of good and bad in expression, viewed with reference to certain ends—a possible accomplishment for the school-boy? According to De Quincy, the end of rhetoric, as conceived by the ancients, was either ornament or fraud, figurative decoration or sophistry—a conception of rhetoric not so very rare in our day. The one end was served by the branches of rhetoric conversant with tropes, figures, and emotional qualities of style; the other by the various maxims of persuasive art, consisting for the most part of shrewd devices for securing plausibility. I believe something more might be made of those branches of education than mere garnishing and trickery; still they are, perhaps, too advanced for the school-room. Be that as it may, there are other parts of rhetoric that have a prior claim, because of more general value. De Quincy's account of ancient rhetoric is a fair enough summary; but of late years the canons of rhetoric have taken a wider scope. In Professor Bain's *Rhetoric or English Composition*, written with the scientific exactness and originality characteristic of the author, we have great advantage upon Aristotle. In addition to the old material completed and methodized, we have a body of rules bearing upon the order of words, the principles of the construction of sentences and of paragraphs, the principles of description, narration, and exposition. Of these subjects, the first four are admirably suited for the school-boy, description more than narration or exposition—although these also might be valuable—because it is regulated by a compact, complete, and easily-managed body of maxims.

What is there, then, to prevent this department of English composition from being practised in our schools, instead of composition in a dead language, where the sole ambition is to be grammatical? A

variety of objections may be urged, which I proceed to discuss one by one. They will be found to disappear on consideration:

1. It may be said that *such studies are not ample enough to keep our school-boys busy, and so fall in the most fundamental requisite of a school-study*. How to arrange words, how to form sentences and paragraphs, how to make an easily-conceivable description—why should not that be learned in a few lessons? If so, why are years spent in teaching our boys to avoid a few stock pitfalls in Latin composition? The reason is obvious. The rules or principles you may learn in a few lessons; you may not be perfect in the practice of these rules after years of study. The same thing is seen in every art. The pugilist or fencer soon learns the guards theoretically; it is a long time before he can promptly parry the hit or thrust of an adversary. The musician knows all the notes, and where he should place his fingers to bring them out, long before he can play at sight. We can all of us remember what we should have done; the opportunity is often past before we remember what we should do. In English composition, as in every thing else, theory and practice are two very different things. Take, for example, two points—how to place qualifying clauses in the most advantageous light for the words they qualify, and how to apportion the emphatic places of a sentence. These are embodied in Professor Bain's work, and treated of in isolation, the one by Mr. Herbert Spencer, the other by Mr. Matthew Arnold. The principles are within the comprehension of any boy of ordinary intelligence. And yet they may be practised for years by a grown man without insuring infallibility in rapid composition. Here is a wide field for educational exercises—a field wide as the writings of the language, beginning with easy examples, and reaching on to the more difficult. No expensive apparatus is required; wherever you have sentences written in English, you may fall to work. The principles I have mentioned are but samples. The difficulty is not to get work to undertake, but to undertake much of the work that waits for us.

2. It may be said that *studies of this kind are mere elegant trifling*. Admitted that classical studies are of no practical value, except for discipline; admitted that these English studies contain all the elements of discipline—the one is as useless subsequently as the other; there is no reason for substituting the one for the other. I say that English studies have at least the advantage of keeping the pupil occupied with the words and correct usages of *his own language*, and that this, were there nothing else, is sufficient cause for change. But I say, further that these studies can be so directed as to cultivate clearness and force of expression. Perhaps it is said that clearness and force are natural gifts. That clearness and force are natural gifts, and that a teacher cannot communicate brains, nobody will dare to dispute; but, that the devices and appliances for giving clearness and force to what they say can be communicated to boys of natural aptitude by a skilled teacher, I hold to be beyond question. All would not learn to compose English well any more than all learn to compose Latin well; but some would learn; and no more can be said for any system of instruction.

3. It may be said that, granting careful tuition to be a help in acquiring clearness and force of expression, a *good style can be formed only by familiarity with the best writers*. I answer that this is no objection to the scheme we have considered. We made provision for the analytical as well as the synthetical study of English, rhetorical parsing as well as rhetorical practice. What I insist upon is, that we must have principles of good and bad in expression drilled into our boys, principles to be borne in mind both in analysis and in synthesis, in reading authors as well as in our own composition. Otherwise how are we to know what to adopt and what to reject in an author, what to imitate and what to avoid; and how shall we escape the errors of Latinists that worship the conceits of Cicero, and adore the Patafinities of Livy? I quote from Dryden a striking confirmation: "Thus difficult it is to understand the purity of English, and critically to discern, not only good writers from bad, and a proper style from a corrupt, but also to distinguish that which is pure in a good author, from that which is vicious and corrupt in him. And for want of all these requisites or the greater part of them, most of our ingenious young men take up some eried-up English poet for their model; adore him and imitate him, as they think, without knowing wherein he is defective, where he is boyish and trifling, wherein either his thoughts are improper to his subject, or his expressions unworthy of his thoughts, or the turn of both is inharmonious."

4. It may be said that, granting the necessity of reading admired authors critically, that is, upon principles of good and bad, *there are no good authors in English*, and that the pupil should go with his principles to classical Greek and Latin. Supposing there were no good authors in our tongue, the amendment of the bad would be as valuable an exercise as the recognition of the good. However, we should be glad to think with Macaulay: "It may safely be said that the literature now extant in the English language is of far greater value than all the literature which three hundred years ago was extant in all the languages of the world put together."

5. It may be urged that if composition were managed according to rule, *there would be no scope for variety*. That depends upon the nature of the body of rules. If the rule is absurdly narrow, obedience to it will result in a dead monotony. For example, on the unity of the sentence, Irving lays down that "different thoughts ought to be separated in the expression by being placed in different periods"—a rule that would reduce all composition to the movement of a jig. On the contrary, Professor Bain recognizes that the matter of a sentence is determined by the rest of the composition, and gives the limitations of the absolute rule of unity. A principle of this kind, so far from inducing monotony, tends to assist variety: the writer is compelled to think of the matter of his sentences, and, in all probability, will thereby be prevented from the natural tendency to run them all together on the same model. Even if the rule were absolute, it would still be valuable, provided its reasons were assigned. The dull pupil would be dull all the same: the eager pupil, if he found the restrictions irksome, would either overthrow the reasons, or cast about for all variety within the letter of the law. Cut a root that intrudes into your garden, and the stump sends out twenty suckers for the one. You produce the same effect when you stop short an inquiring boy with a rule: the dull boy, a dead rule, is little affected for good or for evil, but the clever boy is put upon his mettle, and becomes twice as active as before.

6. It will be said that *writing by rule, like walking on stilts*, must be a very cramped and constrained movement. The awkwardness in both cases is removed by practice.

7. It might be maintained that we should have *nobody to teach the new subject*. Such an evil would rapidly disappear. Many teachers are already competent, and all could without difficulty keep ahead of their first batch of pupils.

8. It may again be said that *no material for school exercises has been accumulated*, and that taking up an author at random would be unprofitable. It is not so; a good deal of such material has been accumulated. The reason why so little, comparatively, has been done, is plain enough. Our school-rooms have been occupied by a foreign invader, and the makers of school-books have been retained in alien service. For generations our boys have been condemned to anomalies in Greek and Latin, gender, declension, and conjugation, Greek accents, Latin quantities, stiff constructions in Virgil, obscure allusions in Juvenal, various readings in *Æschylus*, years of study at things of no human use or interest; and generation after generation of schoolmasters and book-compilers have been tortured to supply the means of torture. If the same amount of ingenuity had been expended upon English, our young writers might have been saved many a throe of composition, and our language many an ugly blemish. No one can tell how much the language might have been improved, and its superior modes and characteristics rendered habitual to the mass of our countrymen.

What I proposed in these papers was, to inquire whether classical studies should cease to be the staple of a liberal education; should in public institutions for general instruction continue to form the basis of all scholarly requirements. We have reached the conclusion that Latin and Greek in that capacity should be replaced by English. There is, however, no reason why such a change should involve the entire cessation of Latin and Greek studies. It would simply make Latin and Greek as other foreign languages are. It would make them optional as Hebrew, Sanscrit, German, French. It would prevent the distorted view that we take of their importance, from their anomalous place in our education. It would enable us to survey them in their true light, as two—perhaps an important two, but still only two—of the great family of languages. Our conclusion is, not that the study of Latin and Greek should be discontinued, but that whatever acquisitions be intended for the school-boy, the foundation of them all should be, not a knowledge of Latin and Greek, but a competent knowledge of his own language.

— Throughout the country at the various universities and colleges, the scholastic year has now closed, and professors and students alike are resting from their labors. A gratifying fact, which is evident from the unanimous verdict of the entire press, is, that the standard of scholarship is steadily advancing, and that, as a body, the graduates of '69 are superior to those of any preceding year. The general tone of our collegiate institutions may be readily gathered from the journals and magazines, edited and managed exclusively by students, which now form a feature of American educational institutions, most of which are noticeable for their freshness, vigor, and ability, though none are quite free from certain defects which are the characteristics of young and unpractised writers. The glories of commencement are gradually being absorbed by the superior attractions of "Class Day," on which the formal disruption of the graduating class takes place. The exercises of this "day of days," while varied in details, embrace everywhere the same general characteristics, consisting of poems, orations, songs, grotesque sports, dedications of memorial trees, vines, and stones, feasting and dancing. The songs are always original, and

most of them as ephemeral as the cloud of smoke from the "farewell pipe of peace;" yet occasionally gems of poetic beauty flash from the Laureate's pen, as in the following farewell ode of the class which has just left "Old Harvard:"

"Like the thousands before us, we gather to-day,  
And with beauty in blossom and gem;  
We march on the world as high-hearted as they,  
To forget, be forgotten, like them.  
Forget thee, my brother? forgotten by thee?  
Alma Mater, thy blessing forgot?  
Oh, dry with the dryness of ashes will be  
The heart that remembereth not!

"Give thy hand to me, brother! Farewell must be said.  
There is bitterness love would prolong:  
There are prayers for the living and praise of the dead;  
There are sorrow, and promise, and song.  
Alma Mater, God bless thee! Dear Mother, adieu!  
On our tongues are burnish! and alas!  
'Tis alas! for the days that will never renew;  
'Tis hurray! we salute thee and pass."



## SCIENTIFIC EDUCATION.

By PROFESSOR HUXLEY.

I HOPE you will consider that the arguments I have now stated, even if there were no better ones, constitute a sufficient apology for urging the introduction of science into schools. The next question to which I have to address myself is, What sciences ought to be thus taught? And this is one of the most important of questions, because my side (I am afraid I am a terribly candid friend) sometimes spoils its cause by going in for too much. There are other forms of culture besides physical science, and I should be profoundly sorry to see the fact forgotten, or even to observe a tendency to starve or cripple literary or æsthetic culture for the sake of science.

Such a narrow view of education has nothing to do with my firm conviction that a complete and thorough scientific culture ought to be introduced into all schools. By this, however, I do not mean that every school-boy should be taught every thing in science. That would be a very absurd thing to conceive, and a very mischievous thing to attempt. What I mean is, that no boy nor girl should leave school without possessing a grasp of the general character of science, and without having been disciplined, more or less, in the methods of all sciences; so that, when turned into the world to make their own way, they shall be prepared to face scientific discussions and scientific problems, not by knowing at once the conditions of every problem, or by being able at once to solve it, but by being familiar with the general current of scientific thought, and being able to apply the methods of

science in the proper way, when they have acquainted themselves with the conditions of the special problem.

That is what I understand by scientific education. To furnish a boy with such an education, it is by no means necessary that he should devote his whole school existence to physical science; in fact, no one would lament so one-sided a proceeding more than I. Nay, more, it is not necessary for him to give up more than a moderate share of his time to such studies, if they be properly selected and arranged, and if he be trained in them in a fitting manner.

I conceive the proper course to be somewhat as follows: To begin with, let every child be instructed in those general views of the phenomena of nature for which we have no exact English name. The nearest approximation to a name for what I mean, which we possess, is "physical geography." The Germans have a better, *Erdkunde* ("earth-knowledge," or "geology," in its etymological sense), that is to say, a general knowledge of the earth, and what is on it, in it, and about it.

If any one who has had experience of the ways of young children will call to mind their questions, he will find that, so far as they can be put into any scientific category, they come under this head of *Erdkunde*. The child asks, "What is the moon, and why does it shine?" "What is this water, and where does it run?" "What is the wind?" "What makes the waves in the sea?" "Where does this animal live, and what is the use of that plant?" And, if not snubbed and stunted by being told not to ask foolish questions, there is no limit to the intellectual craving of a young child, nor any bound to the slow but solid accretion of knowledge and development of the thinking faculty in this way. To all such questions, answers which are necessarily incomplete, though true as far as they go, may be given by any teacher whose ideas represent real knowledge, and not mere book-learning; and a panoramic view of nature, accompanied by a strong infusion of the scientific habit of mind, may thus be placed within the reach of every child of nine or ten.

After this preliminary opening of the eyes to the great spectacle of the daily progress of nature, as the reasoning faculties of the child grow, and he becomes familiar with the use of the tools of knowledge—reading, writing, and elementary mathematics—he should pass on to what is, in the more strict sense, physical science. Now, there are two kinds of physical science: the one regards form and the relation of forms to one another; the other deals with causes and effects. In many of what we term our sciences, these two kinds are mixed up together; but systematic botany is a pure example of the former kind, and physics of the latter kind of science. Every educational advan-

tage which training in physical science can give is obtainable from the proper study of these two; and I should be contented, for the present, if they, added to our *Erdkunde*, furnished the whole of the scientific curriculum of schools. Indeed, I conceive it would be one of the greatest boons which could be conferred upon England, if henceforward every child in the country were instructed in the general knowledge of the things about it—in the elements of physics and of botany. But I should be still better pleased if there could be added somewhat of chemistry, and an elementary acquaintance with human physiology.

So far as school education is concerned, I want to go no further just now; and I believe that such instruction would make an excellent introduction to that preparatory scientific training which, as I

have indicated, is so essential for the successful pursuit of our most important professions. But this modicum of instruction must be so given as to insure real knowledge and practical discipline. If scientific education is to be dealt with as mere book-work, it will be better not to attempt it, but to stick to the Latin grammar, which makes no pretence to be any thing but book-work.

If the great benefits of scientific training are sought, it is essential that such training should be real, that is to say, that the mind of the scholar should be brought into direct relation with fact, that he should not merely be told a thing, but made to see by the use of his own intellect and ability that the thing is so, and so otherwise. The great peculiarity of scientific training, that in virtue of which it cannot be replaced by any other discipline whatsoever, is this bringing of the mind directly into contact with fact, and practising the intellect in the completest form of induction; that is to say, in drawing con-

clusions from particular facts made known by immediate observation of nature.

The other studies which enter into ordinary education do not discipline the mind in this way. Mathematical training is almost purely deductive. The mathematician starts with a few simple propositions, the proof of which is so obvious that they are called self-evident, and the rest of his work consists of subtle deductions from them. The teaching of languages, at any rate as ordinarily practised, is of the same general nature—authority and tradition furnish the data, and the mental operations of the scholar are deductive.

Again, if history be the subject of study, the facts are still taken upon the evidence of tradition and authority. You cannot make a boy see the battle of Thermopylæ for himself, or know of his own knowledge that Cromwell once ruled England. There is no getting



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into direct contact with natural fact by this road; there is no dispensing with authority, but rather a resting upon it.

In all these respects, science differs from other educational discipline, and prepares the scholar for common life. What have we to do in every-day life? Most of the business which demands our attention is matter of fact, which needs, in the first place, to be accurately observed or apprehended; in the second, to be interpreted by inductive and deductive reasonings, which are altogether similar in their nature to those employed in science. In the one case, as in the other, whatever is taken for granted is so taken at one's own peril; fact and reason are the ultimate arbiters, and patience and honesty are the great helpers out of difficulty.

But, if scientific training is to yield its most eminent results, it must, I repeat, be made practical. That is to say, in explaining to a child the general phenomena of nature, you must, as far as possible, give reality to your teaching by object-lessons; in teaching him botany, he must handle the plants and dissect the flowers for himself; in teaching him physics and chemistry, you must not be solicitous to fill him with information, but you must be careful that what he learns he knows of his own knowledge. Don't be satisfied with telling him that a magnet attracts iron. Let him see that it does; let him feel the pull of the one upon the other for himself. And, especially, tell him that it is his duty to doubt until he is compelled, by the absolute authority of nature, to believe that which is written in books. Pursue this discipline carefully and conscientiously, and you may make sure that, however scanty may be the measure of information which you have poured into the boy's mind, you have created an intellectual habit of priceless value in practical life.

One is constantly asked, When should this scientific education be commenced? I should say, with the dawn of intelligence. As I have already said, a child seeks for information about matters of physical science as soon as it begins to talk. The first teaching it wants is an object-lesson of one sort or another; and, as soon as it is fit for systematic instruction of any kind, it is fit for a medium of science.

People talk of the difficulty of teaching young children such matters, and in the same breath insist upon their learning their Catechism, which contains propositions far harder to comprehend than any thing in the educational course I have proposed. Again, I am incessantly told that we who advocate the introduction of science into schools make no allowance for the stupidity of the average boy or girl; but, in my belief, that stupidity, in nine cases out of ten, "*fit, non nascitur*," and is developed by a long process of parental and pedagogic repression of the natural intellectual appetites, accompanied by a persistent attempt to create artificial ones for food which is not only tasteless, but essentially indigestible.

Those who urge the difficulty of instructing young people in science are apt to forget another very important condition of success—important in all kinds of teaching, but most essential, I am disposed to think, when the scholars are very young. This condition is, that the teacher should himself really and practically know his subject. If he does, he will be able to speak of it in the easy language, and with the completeness of conviction, with which he talks of any ordinary every-day matter. If he does not, he will be afraid to wander beyond the limits of the technical phraseology which he has got up; and a dead dogmatism, which oppresses or raises opposition, will take the place of the lively confidence, born of personal conviction, which cheers and encourages the eminently sympathetic mind of childhood.

I have already hinted that such scientific training as we seek for may be given without making any extravagant claim upon the time now devoted to education. We ask only for "a most favored nation" clause in our treaty with the schoolmaster; we demand no more than that science shall have as much time given to it as any other single subject—say four hours a week in each class of an ordinary school.

For the present, I think men of science would be well content with such an arrangement as this; but, speaking for myself, I do not pretend to believe that such an arrangement can be, or will be, permanent. In these times the educational tree seems to me to have its roots in the air, its leaves and flowers in the ground; and I confess I should very much like to turn it upside down, so that its roots might be solidly imbedded among the facts of nature, and draw thence a sound nutriment for the foliage and fruit of literature and of art. No

educational system can have a claim to permanence unless it recognizes the truth that education has two great ends to which every thing else must be subordinated. The one of these is to increase knowledge; the other is to develop the love of right and the hatred of wrong.

With wisdom and uprightness a nation can make its way worthily, and beauty will follow in the footsteps of the two, even if she be not specially invited; while there is, perhaps, no sight in the whole world more saddening and more revolting than is offered by men sunk in ignorance of every thing but what other men have written; seemingly devoid of moral belief or guidance, but with the sense of beauty so keen, and the power of expression so cultivated, that their sensual caterwauling may be almost mistaken for the music of the spheres.

At present, education is almost entirely devoted to the cultivation of the power of expression and of the sense of literary beauty. The matter of having any thing to say beyond a hash of other people's opinions, or of possessing any criterion of beauty, so that we may distinguish between the godlike and the devilish, is left aside as of no moment. I think I do not err in saying that if science were made the foundation of education, instead of being, at most, stuck on as a cornice to the edifice, this state of things could not exist.

In advocating the introduction of physical science as a leading element in education, I by no means refer only to the higher schools. On the contrary, I believe that such a change is even more imperatively called for in those primary schools in which the children of the poor are expected to turn to the best account the little time they can devote to the acquisition of knowledge. A great step in this direction has already been made by the establishment of science-classes under the department of science and art—a measure which came into existence unnoticed, but which will, I believe, turn out to be of more importance to the welfare of the people than many political changes, over which the noise of battle has rent the air.

Under the regulations to which I refer, a schoolmaster can set up a class in one or more branches of science; his pupils will be examined, and the State will pay him, at a certain rate, for all who succeed in passing. I have acted as an examiner under this system from the beginning of its establishment, and this year I expect to have not fewer than a couple of thousand sets of answers to questions in Physiology, mainly from young people of the artisan class, who have been taught in the schools which are now scattered all over Great Britain and Ireland. Some of my colleagues, who have to deal with subjects such as Geometry, for which the present teaching power is better organized, I understand, are likely to have three or four times as many papers. So far as my own subjects are concerned, I can undertake to say that a great deal of the teaching, the results of which are before me in three examinations, is very sound and good, and I think it is in the power of the examiners, not only to keep up the present standard, but to cause an almost unlimited improvement.

Now what does this mean? It means that by holding out a very moderate inducement, the masters of primary schools in many parts of the country have been led to convert them into little foci of scientific instruction, and that they and their pupils have contrived to find or to make time enough to carry out this object with a very considerable degree of efficiency. That efficiency will, I doubt not, be very much increased as the system becomes known and perfected, even with the very limited leisure left to masters and teachers on week-days. And this leads me to ask, Why should scientific teaching be limited to week-days?

Ecclesiastically minded persons are in the habit of calling things they do not like by very hard names, and I should not wonder if they brand the proposition I am about to make as blasphemous and worse. But, not minding this, I venture to ask, Would there really be any thing wrong in using part of Sunday for the purpose of instructing those who have no other leisure, in a knowledge of the phenomena of nature, and of man's relation to nature?

I should like to see a scientific Sunday-school in every parish, not for the purpose of superseding any existing means of teaching the people the things that are for their good, but side by side with them. I cannot but think there is room for all of us to work in helping to bridge over the great abyss of ignorance which lies at our feet.

And if any of the ecclesiastical persons to whom I have referred, object that they find it derogatory to the honor of the God whom they worship to awaken the minds of the young to the infinite wonder and majesty of the works which they proclaim His, and to teach them

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We are glad to recognize the growing appreciation of the work of these associations by the public, and the liberal hospitality extended to them by the citizens where such gatherings take place. The arrangements at Trenton for the entertainment and convenience of strangers are very complete, and give promise that the reunion will be pleasant as well as profitable.



## THE TRENTON EDUCATIONAL CONVENTIONS.

"ON all great subjects," says Mr. Mill, "much yet remains to be said;" and perhaps there is no subject upon which so much still waits for utterance as that of education. Although it is the oldest of all the topics of human thought, it is still the freshest and the richest. Twenty-five centuries of discussion, so far from exhausting it, have but fairly introduced us to its real significance, and, in the depth, range, vital moment, and broad applicability of its inquiries, the subject opens before us today with all the attractiveness of novelty. This, indeed, is the one common and permanent question of humanity, which remains the same under all guises of nationality, race, or civil evolution. Governments may pass away, religions may change, legislative policies may rise and decline, social institutions may fluctuate, but amidst all these mutations, the question of the development of the human being remains central and constant—the one unchanging problem which is forced anew on every generation is, the training of its rising successor. The problem remains the same, but, as its solution depends upon knowledge, and as this is constantly advancing, each age encounters it with a better preparation, and in the light of a larger experience.

But, if much yet remains to be said on the subject of education, the provision is ample for securing the end. That tendency to organization, for the comparison of views and the promotion of ideas, which is so strong in this country, is conspicuously manifested among those who consecrate themselves to the educational profession, in the formation of state and national associations, devoted to the various departments of the subject. Three conventions, The National Superintendents' Association, The American Normal School Association, and The National Teachers' Association, will assemble at Trenton, New Jersey, on Monday, the 16th of August, and occupy the week with their deliberations. It is expected that the occasion will call together the leading educators of the country, and the programme announces that the most important topics in the whole educational field will come under consideration. That we are at present in a state of profound transition in reference to this great subject, no observing person can doubt. That which may be regarded as settled bears but a very small comparison to that which is still undetermined. In glancing over the prospectus of proceedings for these conventions, we observe that the fundamental questions are still open, and further light upon them is demanded. The relations of the State, both to the higher education and to primary schools, the extent to which instruction should be free, the religious bearings of the subject, the relations of culture to labor, the mental care and development of the colored race, and numerous practical inquiries respecting the best methods of teaching,—these are all to become matters of public and searching discussion.

Such is the scope of the work that is still before the educa-

tional profession. While there has been great progress in the art of teaching, in methods of imparting knowledge, and in school facilities, and a clearer recognition of the importance and dignity of the tutorial vocation, there is still much to be done before the profession can be established upon a basis of clearly established and universally recognized principles. No agency works toward this end so effectually as these concourses of thinking and practical men and women, who bring the results of their experience into comparison, disclose deficiencies, register progress, and indicate the directions of future improvement.

The marked tendency of education in our time, as of all other modes of human activity, is, that it is becoming less and less a mere empirical art, and more and more a rational science. It is becoming increasingly evident, and is now widely admitted, that the teacher has to do with the laws of phenomena just as much as the metallurgist or the farmer. All science has two elements—the observation of facts, and the reasoning upon facts. The observation of facts is eminently a personal or individual matter. The observer may do this work alone, and it is only required that he shall do it accurately, faithfully, and conscientiously. But, how to interpret the facts, and deduce principles from them, is more a matter of the joint action of many minds. To generalize requires the marshalling of various data which are to be reduced to unity and brought under a common explanation.

Now, the school-room is the place where the foundations of educational science are laid in the personal observation of the teacher. Sir John Herschel discriminated between passive observation and active observation, or experiment; but the classroom is the field for both. The teacher not only notes what is before him, but he participates in it; he directs it, he works to ends—in truth, he is constantly arranging the conditions of experiments, is constantly performing experiments in the development of mind and character, and has before him perpetually the results of his operations. But, to arrive at general principles, these results must be compared, qualified, and interpreted by other observations and other results. Hence the importance and indispensableness of these gatherings of educators for the mental elaboration of the materials of experience which it is the duty of each to contribute. Such conventions are, therefore, essential instrumentalities in the progress of the profession, and they should be attended by all interested in the subject.

We say designedly, *by all interested in the subject*, and we mean to state that these concourses have a far stronger claim upon the attention of other classes than has yet been allowed. For, as we have said before, this is a subject that concerns all alike. Its claim to consideration is coextensive with parenthood, and as broad as the interests and destiny of society which it immediately involves. All the cultivated classes of the community should hence be represented in these teachers' assemblies, both to contribute to their deliberations and to lend the sanction and encouragement of their presence to this important means of educational improvement. There is one profession, especially, which should cooperate in this relation with the work of educational development more fully and earnestly than it has hitherto done, and that is the medical profession. The physician is the only regular student of the science of human nature, and his special studies have a vital bearing on the teacher's work. The old notion, that the teacher is required to understand only a few branches of study, is exploded; and the equally-erroneous notion, that, if he goes still further, he only requires to understand something about mental philosophy, is also exploded. The work of education is nothing less than the building up of character by the cultivation and training of the pupil's whole nature—physical, emotional, and intellectual. In all that pertains to this, the intelligent physician is naturally more at home than any one else, and is, therefore, qualified to take an influential part in educational discussions.